Hubble Space Telescope

To discuss ...

- There are lots of telescopes on Earth, but scientists still have many reasons for wanting a telescope in space. Can you think of some of them..?

  -- Don't have to wait until it gets dark to use a space telescope.
  (It's always dark in space.)
  -- Don't have to worry about cloudy weather.
  (There are no clouds or rainy days in space.)
  -- Don't have to worry about atmospheric distortion.
  (Even on a clear day, the Earth's atmosphere can make distant objects look fuzzy. That's what makes stars appear to "twinkle." In space, they don't twinkle. Stars shine with a steady light.)
  -- The Hubble orbits the Earth, and can see the whole sky.
  (We only see the "northern sky" at night. People who live south of the equator see the "southern sky," which we never see.)

- How do we point a telescope and keep it steady when it's floating in space..?

  -- Hubble uses 20 million "guide stars" that are loaded into its computer memory to keep itself steady in space. It finds and locks onto a couple of guide stars to keep itself steady. Then it can zero in on a specific object anywhere in space and take a picture.
  (* It uses gyroscopes and "reaction wheels" to twist and turn. It does <u>not</u> use little "retro rockets" because even a little bit of rocket exhaust could interfere with the telescope's clear view.)

- Who is the Hubble Space Telescope named after..?

  -- Edwin Hubble, an American astronomer who discovered much of what we know about the Universe today. He died in 1953.
  (Hubble discovered that the Universe is filled with other galaxies like our own. So, you could say he discovered most of the Universe..!)

- Why do scientists feel it's important to study outer space..?

  -- For the same reason early explorers wanted to sail across the oceans for the first time – to see what's on the "other side"…
  -- Do you ever look at the stars and wonder, "What's out there?" What kinds of questions come to your mind..?

NOTE: In the next few years, NASA plans to launch the "Next Generation Space Telescope." It will be many times more powerful than Hubble, allowing us to see farther than ever before…and see things no one has ever seen.